at 3 French feet being ·1·7, while at 24 French feet it is reduced to 1°. The soil of which the Observatory Hill is composed, and in which the thermometers are sunk, is dry gravel, and the unusual circumstance of decrease of temperature downward observed in the comparison of the 3 feet and 24 feet thermometers, seems to indicate that the surface of the hill is warmer than the surrounding land.

In the present state of our knowledge, then, it appears that when the temperature of the earth has been observed at a depth of some hundreds of feet in any locality in Great Britain, and has not been accurately determined at a less depth, some knowledge of the rate of increase downwards may be obtained, by assuming provisionally that the mean temperature of the surface is about a degree higher than the mean temperature of the air, supposing the latter to be known.

It is to be wished that the Meteorological Society would, from the ample materials in their possession, publish a map of annual isothermals for Great Britain; and the objects of this committee would be greatly furthered by an extensive series of soil temperature observations at the depth of about 3 feet.

The committee are anxious to carry into effect Mr. Hull's proposal (quoted in their last Report) to bore down from the bottom of a deep mine; and as Rosebridge Colliery appears to be an eminently suitable locality for such an operation, the Secretary has consulted Mr. Bryham respecting its practicability and probable cost. Mr. Bryham's reply is that there would be no difficulty in carrying out the proposal at Rosebridge, that to make preparations and bore 300 feet would, on a rough estimate, cost £150, and that the second 300 feet would probably cost about the same sum.

The committee would earnestly appeal to the liberality of the Association to enable them to put this design in execution, and they would remark that the sooner it is carried out, the more valuable the results obtained will be, as the mine has been but recently opened to its present depth, and the influence of atmospheric temperature will every year become more sensible in the strata below.

SCIENTIFIC SERIALS

IN the *Annalen der Chemie und Pharmacie* for May 1870, we find several important papers, of which the following are abstracts:—"Investigations on some derivatives of cinnamic acid, by Carl Glaser." In this lengthy and most interesting paper is described the Phenylpropiolic acid $C_9H_6O_2$, a new acid which differs from cinnamic acid by containing H_2 less. It is obtained either by the action of sodium and CO_2 on β bromstyrol, or by the action of alcoholic potash on a bromcinnamic acid. On heating with water to 120°, it splits up into CO_2 and acetenylbenzol $C_2H\ C_6H_5$, which latter can also be obtained by the abstraction of 2 HBr from dibromstyrol. Silver, copper, and sodium derivatives of this remarkable hydrocarbon are described, from the latter of which, by the action of CO_2, the author succeeded in regenerating phenylpropiolic acid. The paper concludes with an account of some Cl and Br derivatives of styrol.—"On mercuryditolyl," by E. Dreher and R. Otto. A white crystalline compound obtained by the action of Na_2Hg on bromtoluol. The authors did not succeed in preparing the corresponding mercury compound from the isomeric brombenzyl.—Note on the behaviour of dibenzyl at high temperatures, by the same authors. This compound is split up according to the equation

$$2\left\{\begin{matrix}CH_2C_6H_5\\CH_2C_6H_5\end{matrix}\right. = 2\,C_6H_5CH_3 + \underbrace{\left\{\begin{matrix}CH\,C_6H_5\\CH\,C_6H_5\end{matrix}\right.}_{\text{Toluylen}}$$

"Note on the conversion of Thiophenol (Phenylic sulphydrate) into Phenylic disulphide," by the same authors. This is effected by distilling the mercury compound of the former, when it splits up into mercury and the bisulphide, which is probably due to the decomposition taking place at a temperature at which the affinity of Hg for S does not yet come into play, since the homologous toluol and benzyl compounds, which require a much higher temperature, give mercuric sulphide and a monosulphide.—"On two isomeric pentachlorbenzols and bichlorbenzols-chloride," by R. Otto. A short description of the mode of preparation and properties of the above compounds. The existence of two pentachlorbenzols, which now seems to be placed beyond all doubt, is of great interest, as it is one of the very few facts irreconcileable with Kékulé's benzol theory, which does not admit of the existence of more than one.—"On sulphotoluid," by R. Otto and Gruber. Obtained by the action of sulphuric anhydride on toluol.—"On aceto-mercury monomethyl and aceto-mercury monethyl," by R. Otto. These two compounds are prepared by the action of acetic acid on mercuric methide and ethide respectively.

$$\left.\begin{matrix}CH_3\\CH_3\end{matrix}\right\}Hg + \left\{\begin{matrix}CH_3\\CO\,OH\end{matrix}\right. = \left.\begin{matrix}CH_3\\C_2H_3O_2\end{matrix}\right\}Hg + CH_4$$

—"On the preparation of organic sulphur compounds by means of sodic hyposulphite," by the same author. Alcohol heated with a concentrated solution gives mercaptan; ethylic iodide mercaptan and ethylic sulphide; chlorbenzyl gives benzylic mercaptan and sulphide.—"On diamidonitro phenylic acid, a new derivative of picric acid," by Peter Griess. This acid is prepared by the reduction of picric acid with ammonic sulphide.—"On azobenzol sulphuric acid," by P. Griess. A product of the action of hot fuming sulphuric acid on azobenzol. By fusion with potash, phenoldiazobenzol $C_{12}H_{10}N_2O$ is obtained, which on treatment with ammonic sulphide, is converted into oxybenzidin $C_{12}H_{12}N_2O$.—"On ozone and antozone," by C. Engler and O Nasse. In this lengthy paper are described a long series of experiments, all of which seem to prove conclusively the non-existence of the third modification of oxygen, called by Schönbein and others antozone, and which the authors prove to be hydric peroxide formed by the oxidation of water, which was present in all those cases where the so-called antozone has been observed by ozone.—"On the constitution of arbutin," by Hugo Schiff. The author considers arbutin to be derived from one atom glycose + one atom hydroquinone $- H_2O$, and describes a number of acetyl and benzoyl derivatives in support of his views.—"On the action of hypochlorous acid on allylic chloride," by H. v Geyerfell. The author has obtained the compound $C_3H_6OCl_2$ by direct addition of the elements of hypochlorous acid to allylic chloride. This on reduction with sodium amalgam yields a liquid, probably allylic alcohol. (?)—"On a new method for the estimation of grape sugar," by Karl Knapp. This method is based on the fact that an alkaline solution of mercuric cyanide is entirely reduced to metallic mercury by grape sugar. By direct experiment it was found that on boiling, 400 mgr. $Hg(CN)_2$ are reduced by 100 mgr. sugar. The solution is prepared by dissolving 10 grm. pure dry $Hg(CN)_2$ in water, adding 100 cc. of a sodic hydrate solution of 1·145 sp. gr., and diluting to 1,000 cc. Pure grape sugar is prepared by recrystallising the commercial dried at 100°, from absolute alcohol. The experiment is performed by heating 40 cc. of the mercury solution—this amount corresponds to 100 mgr. sugar—to boiling in a porcelain dish, and then adding sugar solution to complete precipitation of the mercury, the end of the reaction being ascertained by placing a drop of the liquid on to a piece of the finest Swedish filter paper, covering a small beaker containing some very strong ammonic sulphide; a brown spot is observed so long as mercury remains in solution. The advantages of this method over Fehling's are, that being equally accurate, the test solution is exceedingly easy to prepare and perfectly stable, a shorter time is required for the estimation, and that the foreign bodies which mask the pure colour of the cuprous oxide are without influence on the reduction of the mercuric cyanide.—"On some isopropyl compounds," by R. D. Silva. In this notice are described isopropylic succinate, benzoate, nitrite, and nitrate, all prepared by the action of isopropylic iodide on the respective silver salts of the acids.

THE *Journal of Botany, British and Foreign*, for September contains a paper by Dr. H. Trimen on Early Icelandic Botany, including an account of Rotböll's observations on the new or little-known but rare plants found in Iceland and Greenland, which appears to have been overlooked by Professor Babington in his "Revision of the Flora of Iceland." It was published in 1770, and adds a few species to the number stated by Professor Babington to be indigenous to Iceland. We have also one of Mr. J. G. Baker's careful and useful contributions to British systematic botany, an account of the British dactyloid saxifrages, which he states to form a complete series of varieties from *S. cæspitosa* to *S. hypnoides*, without any clearly marked gap at any point between the extremes; and the line of progression substantially straight, very little if at all complicated, as in the case of *Rubus*, by cross-relationships. The order of sequence is as follows: 1. *S. cæspitosa*, 2. *S. Sternbergii*, 3. *S. decipiens*,

4. *S. quinquefida*, 5. *S. hypnoides*. A table of their geographical distribution is subjoined. Two or three other short original articles and notes are also included, and the official report for 1869 of the botanical department of the British Museum.

THE *Geological Magazine* for October (No. 76) commences with a long paper, illustrated with two plates, by Mr. D. Mackintosh, on the surface-geology of the Lake district, relating chiefly to the effects of glacial conditions observable among the mountains of Cumberland and Westmoreland.—Mr. T. Davidson contributes a third series of descriptions of Italian tertiary brachiopoda, including numerous species of the genera *Rhynchonella* and *Crania*, which are figured on the accompanying plate.—In a paper on the chalk of Kent, Mr. G. Dowker, following Mr. Whitaker, distinguishes the Margate chalk as constituting the highest section of the chalk observable in that district, and gives a list of the fossils which it contains. The author proposes a division of the Kentish chalk into six sections.—A fourth and last paper is by Mr. H. B. Medlicott, on the mode of occurrence of faults in strata. The remainder of the number is, as usual, occupied by reports, reviews, &c.

SOCIETIES AND ACADEMIES

NORWICH

Norfolk and Norwich Naturalists' Society, Aug. 30.—Mr. Stevenson read a valuable paper communicated by Prof. Newton, of Cambridge, on the method adopted by his brother and himself for registering Natural History phenomena. The Register, a volume of which was on the table, was kept at Elveden, near Thetford, during a period of ten years, and its great value consists in the variety and completeness of the information with regard to each species of bird found in that neighbourhood, and the slight amount of labour required to keep up the daily record. This is effected by the use of signs extremely simple in their construction, but conveying an amount of information never before dreamed of in registers of this description: a life history from day to day of each species is given; all the rare and occasional visitors recorded, and the most striking botanical phenomena are all noted fully and explicitly, but in such a way as to occupy barely five minutes in doing. What a boon this decrease in labour alone is to the conscientious recorder, he who has had to post up his register after a hard day's work in the field will be in a position fully to appreciate. Some of the results obtained from the study of the register are highly valuable, as, for instance, the migratory habits of the song thrush, and we strongly recommend the paper, which will be published in the Transactions of the Society, to the consideration of naturalists, feeling certain that important results would be obtained by the comparison of registers kept on Prof. Newton's plan in different districts of the county. Mr. Stevenson also read a note with regard to a habit of the rook, which appears to have attracted very little attention, viz., that of throwing up the indigestible portions of its food in the form of large pellets, after the manner of hawks and owls. Several of these pellets, or "quids," picked up on the cliffs at Cromer and Sherringham, consisting mainly of the indigestible husks of barley, with a few pebbles and fragments of small beetles, were exhibited, all having been found near the edge of the cliffs, together with rooks' feathers, showing that the birds had been preening themselves during the process of digestion. A number of interesting plants found in the neighbourhood were exhibited by Mr. Bircham. At the suggestion of Mr. Southwell, a subcommittee was formed to take into consideration the formation of a list of the natural productions of the county; and it is hoped that help for this purpose will be rendered by kindred societies and naturalists resident in the county. The President announced that Mr. J. H. Gurney, jun., who has been travelling in Algeria, would read a paper on the birds of that country at the next meeting of the Society, on September 27th.

PARIS

Academy of Sciences, Sept. 5.—M. Cave presented a second note on the generative zone of the appendages in monocotyledonous plants.—M. de Saint-Venant communicated a note by M. Boussinesq, supplementary to his memoir on periodical liquid waves, and showing the general relations between the internal energy of a fluid or solid body and its pressures or elastic forces.—A note was presented by M. W. de Fonvielle on a theory of Mariotte's on barometric oscillations, relating to the rising of the mercury when the wind is from the north and north-east, and its fall when the wind is from the south and south-west. —M. Delaunay communicated a notice of the discovery of a new comet by M. Coggia, at Marseilles, on the 28th August. —A note on the composition of nadorite by M. Flajolot, was presented by M. Combes. The mineral may be regarded as a combination of oxide of lead and oxychloride of antimony, in accordance with the formula $Sb^2\ O^2\ Cl\ 2Pb\ O$.—M. Claude Bernard communicated a memoir on the venom of the scorpion, by M. Jousset. The author has experimented with the poison of *Scorpio occitanus*, by inoculating it upon tree frogs. He found that it acts directly upon the red globules of the blood, depriving them of the power of passing each other freely, and thus causing them to become agglutinated to each other, and obstruct the circulation. The extent of the action of the poison is dependent on its quantity.—M. Zaliwski noticed a battery of zinc and carbon giving a maximum of intensity for twelve hours. The zinc is immersed in a solution of hydrochlorate of ammonia, the carbon in a mixture of nitric and sulphuric acid.

BOOKS RECEIVED

ENGLISH.—Advanced Text-book of Zoology: H. A. Nicholson (Blackwood and Sons).—Thayer Expedition: Scientific Results of a Journey in Brazil: L. Agassiz (Trübner and Co.).—Physical Geography: J. K. Laughton (Potter).—The Food, Use, and Beauty of British Birds: C. O. Groom-Napier (Groombridge and Sons).—Treatment and Utilisation of Sewage: Prof. Corfield (Macmillan and Co.).—Arithmetic, Parts 2 and 3, Sonnenschein and Nesbit (Murby).

FOREIGN.—(Through Williams and Norgate)—Helgoland: Nord-see-studien; Ernst Hallier.—Fauna öfver Sveriges och Norges Ryggradsdjur: Wilh. Lilljeborg.—Der Laacher See und seine vulkanischen Umgebungen: Dr. Jacob Noggerath.—Die Sculptur und die feineren Structur-verhältnisse der Diatomaceen, Heft 1.: Fritsch und Müller.—Iconographia familiarum naturalium regni vegetabilis, Heft xx.: Dr. Schnitzlein.—Note sur un Foyer de l'Age de la Pierre polie: E. Perrault.—Mollusques tertiaires, Fasc. i.: F. Bayan.—Erster Nachtrag zum Lehrbuche der Aufbereitungskunde, mit Atlas: von Rittinger.—Natur und Gott: H. Baumgärtner.—Ueber Eis und Schnee: G. Studer.—Texture, Structure, und Zell-leben in den Adnexen des menschlichen Eies: Dr. Winkler.—Grundzüge einer Spongien-fauna des atlantischen Meeres: Dr. O. Schmidt.—Les Houillères en 1869: A. Burat.—Geographisches Jahrbuch III. Band, 1870: E. Behm.—Wissenschaftlich-technisches Handbuch des gesammten Eissengiessereibetriebes: E. F. Dürre.—Ueber die wachsende Kenntniss des unsichtbaren Lebens: Dr. Ehrenberg.—Botanische Untersuchungen über die Alkoholgährungspilze: Dr. M. Reess.—Verhandlungen der schweizerischen naturforschenden Gesellschaft in Solthurn, 1869.—Mittheilungen der naturforschenden Gesellschaft in Berne, 1869.

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